
Marine Physical Laboratory

Shallow Water Adaptive Array Processing and Data Analysis

W. S. Hodgkiss

Supported by the
Chief of Naval Research
Contract N00014-93-D-0141 (DO#5)

Final Report

MPL-U-68/95
September 1995

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19960409 176



University of California, San Diego
Scripps Institution of Oceanography

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data need ed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. Agency Use Only (Leave Blank).			2. Report Date. September 1995			3. Report Type and Dates Covered. Final Report		
4. Title and Subtitle. Shallow Water Adaptive Array Processing and Data Analysis			5. Funding Numbers. N00014-93-D-0141 DO#5			6. Author(s). W. S. Hodgkiss		
7. Performing Monitoring Agency Name(s) and Address(es). University of California, San Diego Marine Physical Laboratory Scripps Institution of Oceanography San Diego, California 92152			8. Performing Organization Report Number. MPL-U-68/95					
9. Sponsoring/Monitoring Agency Name(s) and Address(es). Chief of Naval Research Department of the Navy 800 North Quincy Street Arlington, VA 22217-5660 Code 321US			10. Sponsoring/Monitoring Agency Report Number.			11. Supplementary Notes.		
12a. Distribution/Availability Statement. Approved for public release; distribution is unlimited.			12b. Distribution Code.					
13. Abstract (Maximum 200 words). A horizontal planar array (HPA) was deployed during SWellEx-1 (Shallow Water evaluation cell Experiment #1). The focus of this effort was on an initial look at the HPA data to determine how well matched-field processing could be carried out with a seafloor array.								
14. Subject Terms. horizontal planar array, matched field processing, shallow water acoustics, ambient noise						15. Number of Pages. 2		
						16. Price Code.		
17. Security Classification of Report. Unclassified			18. Security Classification of This Page. Unclassified			19. Security Classification of Abstract.. Unclassified		
						20. Limitation of Abstract. None		

Shallow Water Adaptive Array Processing and Data Analysis

William S. Hodgkiss

**Final Report to the
Office of Naval Research
Contract N00014-93-D-0142 (DO #5)
for the Period 5-31-94 - 10-31-94**

Abstract

A horizontal planar array (HPA) was deployed during SWellEx-1 (Shallow Water evaluation cell Experiment #1). The focus of this effort was on an initial look at the HPA data to determine how well matched-field processing could be carried out with a seafloor array.

Research Objective

The objective of this project was to analyze the matched-field processing performance characteristics of the USTS horizontal planar array (HPA) which was deployed during SWellEx-1.

Research Summary

SWellEx-1 (Shallow Water evaluation cell Experiment #1) was carried out in August 1993 west of Point Loma in approximately 200 m water. During this experiment, McDonnell-Douglas deployed the USTS horizontal planar array (HPA) to the seafloor with the data being recorded on the R/P FLIP.

The focus of this effort was on an initial look at the HPA data to determine how well matched-field processing could be carried out with a seafloor array. Due to the relatively compact size of the USTS array (approximately 50 m aperture), it was demonstrated that the acoustic field from a distant source did not have sufficient complexity to yield good matched-field processing range-depth resolution. Simulations then were carried out to investigate how the range-depth resolution would improve with greater aperture in the direction of the source. These results from the USTS data analysis and simulations are reported in [1].

References

1. W.S. Hodgkiss, J. Murray, K.H. Kim, and A.M. Richardson, "Matched-Field Localization with both a Horizontal Planar Array and a Horizontal Line Array in a Shallow Water Environment," Seventh Matched-Field Processing Workshop, Defence Research Establishment Pacific (DREP), December 1994.

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Chief of Naval Research (3)
Department of the Navy
Ballston Tower One
800 North Quincy Street
Arlington, VA 22217-5660
Atten:c CDR Mitch Shipley
Code 321US

Department of the Navy (1)
Office of Naval Research
San Diego Regional Office
4520 Executive Drive, Suite 300
San Diego, CA 92121-3019

Commanding Officer (1)
Naval Research Laboratory
Atten: Code 2627
Washington, D.C. 20375-5320

Defense Technical Information Center (4)
Building 5, Cameron Station
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